



Designation: A 489 – 00

Standard Specification for Carbon Steel Lifting Eyes¹

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This standard has been approved for use by agencies of the Department of Defense.

1. Scope *

1.1 This specification covers weldless forged, quenched, and tempered carbon steel threaded lifting eyes (formerly eyebolts) for overhead lifting.

NOTE 1—Lifting eyes carrying this specification number even though they are liquid quenched and tempered may be processed from carbon steel which, in the composition range permitted by this specification, could have a fracture appearance transition temperature (50 % shear) higher than operating temperatures. Therefore, in order to minimize the possibility of a brittle cleavage failure, these lifting eyes should never be loaded above the proof load, and should not be used when surface discontinuities exist on the lifting eyes.

1.2 The specification includes two types denoting shank pattern and one style denoting shank length (both defined in ANSI/ASME B 18.15) as follows:

1.2.1 *Type 1*—Plain pattern (straight shank).

1.2.2 *Type 2*—Shoulder pattern.

1.2.3 *Style B*—Short length.

1.3 The values stated in inch-pound units are to be regarded as the standard. The SI values given in parentheses are for information only.

2. Referenced Documents

2.1 ASTM Standards:

A 370 Test Methods and Definitions for Mechanical Testing of Steel Products²

A 751 Test Methods, Practices, and Terminology for Chemical Analysis of Steel Products²

D 3951 Practice for Commercial Packaging³

E 112 Test Methods for Determining Average Grain Size⁴

F 606 Test Methods for Determining the Mechanical Properties of Externally and Internally Threaded Fasteners, Washers, and Rivets⁵

2.2 ANSI/ASME Standards:

B 1.1 Unified Inch Screw Threads⁶

B 18.15 Forged Lifting Eyes⁶

B 18.24.1 Part Identifying Number (PIN) Code System⁷

3. Ordering Information

3.1 Orders for lifting eyes under this specification should include the following information:

3.1.1 ASTM specification number and date of issue.

3.1.2 Name of product, that is lifting eyes.

3.1.3 Type and style (See 1.2, Type 1 Style B) will be furnished when a Type and Style is not specified.

3.1.4 Drawing, if nonstandard lifting eyes are required (See 8.3).

3.1.5 Number of pieces.

3.1.6 Size, nominal thread diameter and threads.

3.1.7 Certification, if required (See Section 14).

3.1.8 Supplementary requirements, if required.

3.1.9 Other special requirements.

3.1.10 For establishment of a part identifying system, see ASME B18.24.1.

4. Materials and Manufacture

4.1 *Melting Process*—The steel shall be made by the open-hearth, basic-oxygen, or electric-furnace process and shall be made to a fine-grain practice.

4.2 *Forging*—Lifting eyes shall be forged without welds.

4.3 *Heat Treatment*—The lifting eyes shall be liquid quenched and tempered prior to machining the threaded end.

4.4 *Machining*—The lifting eyes shall be machined after the quench and temper operation.

4.5 *Threads*—The lifting eyes shall be threaded. Threads may be rolled, cut, or ground.

5. Chemical Composition

5.1 *Limits*—The lifting eyes shall be manufactured from steels having a heat analysis conforming to the requirements in Table 1.

5.2 Product Analysis:

5.2.1 Analyses of finished lifting eyes may be made by the purchaser or may be requested to be made by the manufacturer.

¹ This specification is under the jurisdiction of ASTM Committee F16 on Fasteners and is the direct responsibility of Subcommittee F16.02 on Steel Bolts, Nuts, Rivets, and Washers.

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² Annual Book of ASTM Standards, Vol 01.03.

³ Annual Book of ASTM Standards, Vol 15.09.

⁴ Annual Book of ASTM Standards, Vol 03.01.

⁵ Annual Book of ASTM Standards, Vol 01.08.

⁶ Available from American National Standards Institute, 11 West 42nd St., 13th Floor, New York, NY 10036.

⁷ Available from American Society of Mechanical Engineers, Three Park Avenue, New York, NY 10016-5990.

*A Summary of Changes section appears at the end of this standard.